

Chapter 14/ acids and bases

Q2) Completion

1. A substance that ionizes almost completely in aqueous solutions, producing H_3O^+ ions, is a(n) ----- acid.

A. strong

B. weak

2. An acid that can donate two protons per molecule is called a(n) ----- acid.

A. monoprotic

B. diprotic

C. divalent

3. Bases are said to be neutralized when they react with ----- to yield----- and -----

A. Acid, water, salt

B. Alkaline, water, salt

C. Water, water, salt

Write the name of each of the following acids in the space provided.

A. HCl

B. H_2SO_4

C. HBrO

D. HNO_2

E. HI

F. H_2CO_3

G. H_2S

H. H_3PO_3

I. HClO_4

J. HNO_3

4. nitrous acid

5. hydrochloric acid

6. carbonic acid

7. sulfuric acid

8. hydriodic acid

9. hypobromous acid

10. hydrosulfuric acid

11. nitric acid

12. phosphorous acid

13. perchloric acid.

14. An acid that contains hydrogen and only one other element is called a(n) -----.

A. di

B. mono

C. binary

15. The species that forms when an acid has given up a proton is called the acid's -----

A. conjugate base

B. conjugate acid

16. Barium carbonate will react with hydrochloric acid to produce -----

A. carbon dioxide, Barium oxide, and water.

B. carbon dioxide, Barium Chloride, and water.

C. carbon mono, Barium Chloride, and water.

17. Explain the difference between strong acids and weak acids.

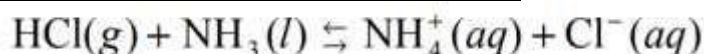
A. A strong acid ionizes completely in an aqueous solution. A weak acid does not ionize completely in aqueous solution.

B. A strong acid ionizes partially in an aqueous solution. A weak acid does not ionize at all in aqueous solution.

18. List five properties of aqueous acids.

- A. Sour taste; change the color of acid-base indicators; some react with active metals to release hydrogen gas; react with bases to produce salts and water; conduct electric current
- B. bitter taste; change the color of acid-base indicators; some react with active metals to release hydrogen gas; react with bases to produce salts and water; conduct electric current
- C. Sour taste; change the color of acid-base indicators; all react with active metals to release hydrogen gas; react with bases to produce salts and water; conduct electric current
- D. Sour taste; change the color of acid-base indicators; some react with active metals to release hydrogen gas; react with bases to produce salts and water; does not conduct electric current

Refer to the equation below to answer (a) and (b).



19. List the conjugate acid-base pairs.

- A. HCl and NH_3^- , and NH_4^+ and Cl
- B. HCl and Cl^- , NH_3 and NH_4^+
- C. NH_4 and Cl^- , NH_3 and $^+ \text{HCl}$

20. Identify each reactant and product as acidic or basic.

- A. Acidic HCl and NH_4^+ , Basic Cl^- and NH_3
- B. Acidic Cl^- and, Basic NH_3 HCl and NH_4^+
- C. Acidic HCl and NH_3 , Basic Cl^- and NH_4^+

Refer to the statement below to answer (a), (b), and (c).

Dilute $\text{HCl}(aq)$ and $\text{NaOH}(aq)$ are mixed in chemically equivalent quantities.

- A. $\text{H}_3\text{O}^+(aq) + \text{Cl}^-(aq) + \text{Na}^+(aq) + \text{OH}^-(aq) \longrightarrow \text{Na}^+(aq) + \text{Cl}^-(aq) + 2\text{H}_2\text{O}(l)$
- B. $\text{HCl}(aq) + \text{NaOH}(aq) \longrightarrow \text{NaCl}(aq) + \text{H}_2\text{O}(l)$
- C. $\text{H}_3\text{O}^+(aq) + \text{OH}^-(aq) \longrightarrow 2\text{H}_2\text{O}(l)$

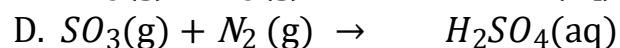
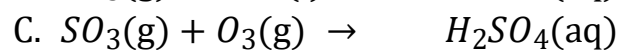
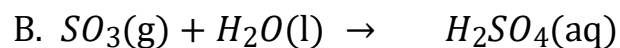
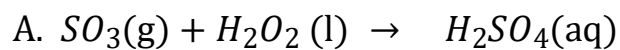
21. Write the chemical equation for the reaction.

22. Write the overall ionic equation for the reaction.

23. Write the net ionic equation.

24. Explain how the production of sulfur trioxide, SO_3 , in industrial processes can result in acid rain. Write an equation for the reaction.

Sulfur trioxide, SO_3 , is produced as a gas and dissolves in atmospheric water to produce a sulfuric acid solution that falls to the ground as rain or snow. The equation is:



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